

## *Alvania garrafensis* Peñas & Rolán 2008 (Gastropoda: Rossoidae) from Croatian waters

### *Alvania garrafensis* Peñas & Rolán 2008 (Gastropoda: Rossoidae) en aguas croatas

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#### ABSTRACT

We report on the presence of numerous specimens of *Alvania garrafensis* Peñas & Rolán 2008 from shell grit dived in shallow waters near several islands of the Quarnero Gulf, North Adriatic Sea, Croatia. The species was up to now known only from the Garraf littoral, Barcelona, East Spain and the present records greatly extend its geographical distribution. Hypotheses that could explain such a large range extension are considered.

#### RESUMEN

Se documenta el registro de numerosos ejemplares de *Alvania garrafensis* Peñas y Rolán 2008 en cascajos conchíferos recolectados por buceo en aguas someras de varias islas del golfo Quarnero, norte del mar Adriático, Croacia. La especie se conocía hasta la fecha sólo en el litoral del Garraf, Barcelona, este de España, así que la nueva cita amplía considerablemente su distribución geográfica. Se adelantan hipótesis que podrían explicar una ampliación tan considerable.

#### INTRODUCTION

*Alvania garrafensis* Peñas & Rolán 2008 was described on a few specimens trawled at 90 m depth off Cubelles, west end of Garraf, after which the species was named. Its known distribution was hitherto limited to the type locality only. A localized distribution has to be expected since the species has a shell protoconch of 1,5 whorls, suggesting its non – planktonic development and hence not a wide geographical range (SCHELTEMA 1978; 1986). In this respect our records from Croatia seem quite strange and surely need to be at least pointed out and, if possible, understood.

#### MATERIALS AND METHODS

Most of the *A. garrafensis* specimens we examined were found dead in shell grit obtained through diving during late Summer 2008 at various stations near the islands of Krk and Prvic, Quarnero Gulf, Croatia, at 35/50 m depth. The material was picked from sandy or muddy bottoms below the coralliferous slopes which in a few steps connect the rocky coast to the bottom. A quantity of ~ 15 litres of shell grit was collected altogether. From this material ~ 340 shells of *A. garrafensis* were extracted;

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this species was the commonest *Alvania* in the sorted material.

This large amount of shells were distributed as follows: Krk, Sokol Point 45m 120 shells; Krk, loc. Baska 38m 18

sh.; Prvic, Kita Bay 45m ~ 100 sh.; Prvic, Gladni Potok Bay 50m 105 sh.

We could also examine two other samples, courtesy of Peter Sossi, Trieste: Prvic, 21m 6 sh; Plavnik, 40m 4 sh.

## TAXONOMY

COENOGASTROPODA Cox, 1960

RISSOIDAE Gray, 1847

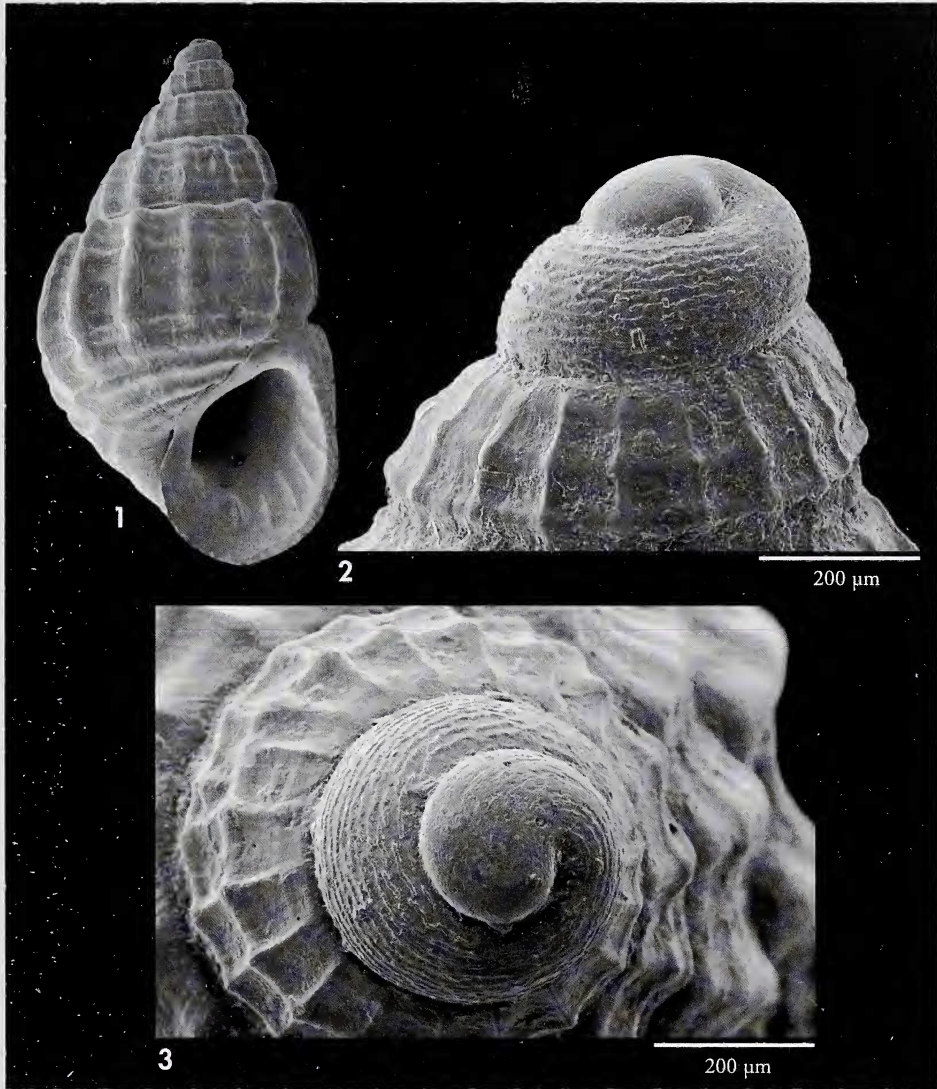
*Alvania* Risso 1826

*Alvania garrafensis* Peñas & Rolán 2008

Figures 1-6 show all the features needed to compare our specimens with *A. garrafensis*. Beyond the general shape, we point out the 1.5 whorls, ~ 400 µm wide shell protoconch with its very characteristic spiral sculpture of 12 more or less fragmented threads; a body whorl a bit less than 70% of the total height; an axial sculpture of orthocone cords interrupted at the base margin; a weak spiral sculpture of 7 cords on the body whorl, 4 between the two sutures and 3 on the base. All these features fit nicely with the holotype original description and images. This however has only three whorls at 2,8 mm height, compared with four whorls at 3,5-4 mm height of our Croatian specimens. We thus conclude that the Spanish original material contained only shells that were slightly immature. In our opinion this fact can accommodate a difference we observed between the two: while our full grown specimens show lyaerae all over the lip internal margin, only 2-3 of these are observed in the holotype shell near the lowest part of the lip. We consider that a minor difference and we are confident that our Croatian specimens have to be assigned to *A. garrafensis*. We moreover sent a few of our specimens to Dr. Emilio Rolan, who produced the SEM images of figs. 1-3 and endorsed our assignment. A hint to this possible assignment was also present in a discussion topic on the "Natura Mediterraneo" Italian online discussion forum <[www.naturamediterraneo.com](http://www.naturamediterraneo.com)>, accessed November 2011.

We nevertheless compared our specimens with the two species *Alvania consociella* Monterosato 1884 and *Alvania disparilis* Monterosato 1890. As for the first we based our observations on personal material from our collections and on images from the literature (GIANNUZZI SAVELLI, PUSATERI, PALMERI & EBREO, 1997; SCAPERROTTA, BARTOLINI & BOGI, 2011). For the second we obtained a photo of a specimen 3,6 mm high, from the Monterosato collection in Rome Zoological Museum (ZMR), courtesy of A. Pierullo. This photo enabled a comparison of this species with our Croatian specimens.

*Alvania consociella* has deep and canaliculated sutures, almost flat whorls, more numerous spiral chords which form nodules crossing the axial ones, giving a nodulose look to the shell shape; it often has few spirals, which are white on a darker background; its protoconch shows a papillae sculpture that is quite different from that of *A. garrafensis*. The photo of *A. disparilis* we saw shows a shell shape more squat than *A. garrafensis* (height to width ratio ~ 1,6 versus 1,9 in Croatian specimens), with rounded whorls and a rounded aperture; the sutures are deep and canaliculated (unlike in *garrafensis*); the thin orthocone axial chords are much narrower than their interspaces (wider in *garrafensis*) and more numerous; the spiral chords are more numerous than in *garrafensis*, as thin as the axial ones, and the axial to spiral crossing forms a regular squared reticule (totally absent in *A. garrafensis*); finally a few (3-4) thin, but well



Figures 1-3. *Alvania garrafensis* SEM images. 1: adult shell 4 mm high, Krk Island, 45 m; 2: protoconch of the same specimen, side view; 3: protoconch of the same specimen, apical view.

*Figuras 1-3. Alvania garrafensis imágenes de MEB. 1: concha adulta de 4 mm de alto, isla de Krk, 45 m; 2: protoconcha del mismo ejemplar, vista lateral; 3: protoconcha del mismo ejemplar, vista apical.*

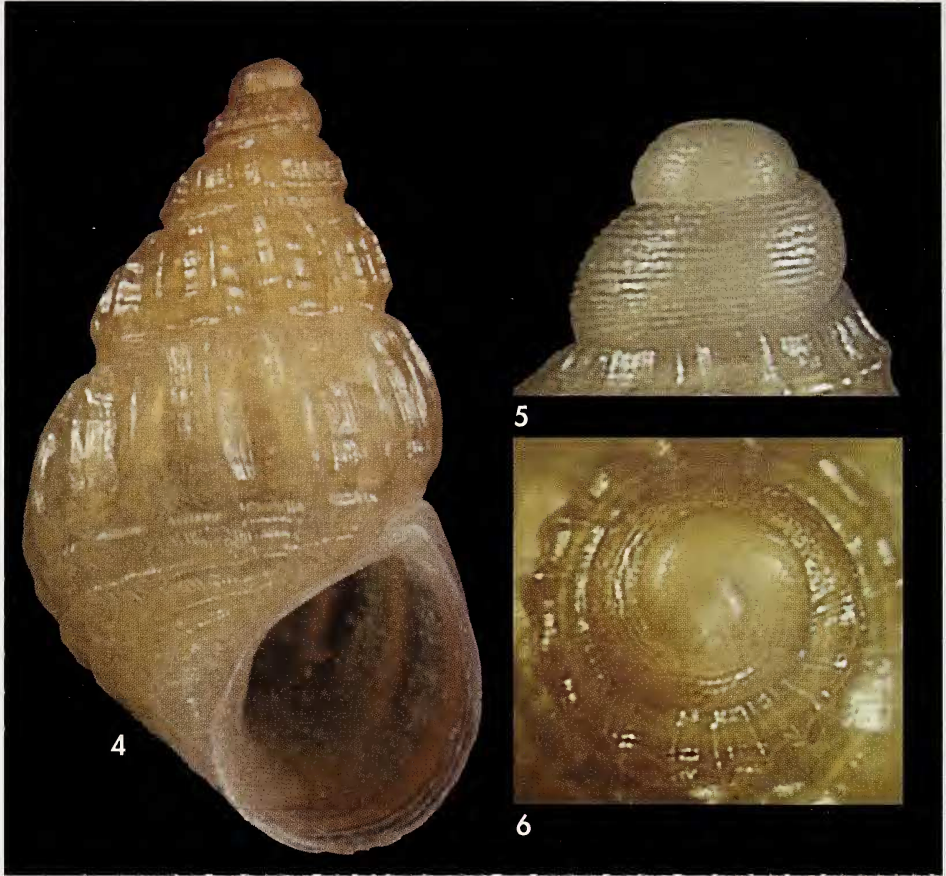
raised and marked smooth spiral chords are evident on the base. All these diffe-

rences are clearly seen comparing Figure 7 to Figures 1-6.

## DISCUSSION

*Alvania garrafensis* is apparently much commoner and widespread in Croatian waters than in the type locality.

It was found in large numbers and in many places in Croatia, always in the depth range 25-50 m, while in the case



Figures 4-6. *Alvania garrafensis*. 4: specimen from Prvic, 50 m, 4 mm high; 5, 6: different views of the protoconch of the same specimen, greatly enlarged.  
Figuras 4-6. *Alvania garrafensis*. 4: ejemplar de Prvic, 50 m, 4 mm de alto; 5, 6: diferentes vistas de la protoconcha del mismo ejemplar, a mayor aumento.

of Garraf only a few specimens coming from a single and much deeper locality (90 m.) were found.

Moreover to our knowledge the species has never been recorded in any locality intermediate between Garraf and Croatia, e.g. French or Italian coasts, although it may well have been overlooked due to its quite recent description.

A possible explanation would be to regard (Rolan, private communication) *A. garrafensis* as a native species in Croatian waters, arrived to Garraf via some "man assisted" transportation mechanism, for instance with the trade of *Ostrea edulis* from the North Adriatic Sea

to the Iberian Peninsula. A different opinion (from A. Peñas, private communication) is that maybe *A. garrafensis* is widely present in the West Mediterranean, but yet unsampled in most areas in deep waters; moreover to his knowledge there is no *Ostrea edulis* import in the type location area. We think that the hypothesis of a Croatian origin for the species arrived in Garraf via some "man assisted" transportation mechanism seems very unlikely and that the hypothesis of a hitherto overlooked species is to be preferred.

We conclude that the problem of the geographical distribution of *A. garrafen-*



Figure 7. *Alvania disparilis*, Palermo, 3.6 mm, specimen in Monterosato collection, Zoological Museum of Rome.

Figura 7. *Alvania disparilis*, Palermo, 3,6 mm, ejemplar en la colección Monterosato, Museo Zoológico de Roma.

*sis* is unclear as yet and its full understanding needs some further research in regions intermediate between the Garraf area and the Adriatic Sea, where it seems well established.

#### ACKNOWLEDGEMENTS

This paper wouldn't have been possible without the generous help of Dr. Emilio Rolan, Vigo, Spain, who prepared the SEM images of our shells, confirmed our species assignment,

shared with us his opinions on the species geographical distribution and revised our paper. We thank him a lot for that. We thank also Peter Sossi, Trieste, for letting us examine some of his specimens, Mrs. Angela Pierullo, Rome, for providing us with a photo of an *A. disparilis* type specimen and Dr. Massimo Appolloni, responsible for the ZMR malacological collection for permission to publish this image. We finally thank an anonymous referee who suggested a few relevant changes to the paper.

#### BIBLIOGRAPHY

- GIANNUZZI SAVELLI R., PUSATERI F., PALMERI A. & EBREO C.<sup>1</sup> 1997. *Atlante delle Conchiglie marine del Mediterraneo Vol II*. Edizioni "La Conchiglia" Roma. 258 pp.
- MONTEROSATO T.A. DI 1890. Conchiglie della profondità del mare di Palermo. *Naturalista Siciliano*, 9 (6): 140-151; 9 (7): 157-166; 9 (8): 181-191.
- PEÑAS A., ROLÁN E. & BALLESTEROS M. 2008. Segunda adición a la fauna malacológica del litoral de Garraf (NE de la Península Ibérica). *Iberus*, 26 (2):15-42.
- SCAPERROTTA M., BARTOLINI S. & BOGI C. 2011. *Accrescimenti Vol III*. L'Informatore Picens, Ancona. 184 pp.
- SCHELTEMA R.S. 1978. On the relationship between dispersal of pelagic veliger larvae and the evolution of marine prosobranch gastropods. In Battaglia B., Beardmore J.A. (Eds.): *Marine organisms: genetics, ecology and evolution*. Plenum, New York, p. 303-322.
- SCHELTEMA R.S. 1986. On dispersal and planktonic larvae of benthic invertebrates: an eclectic overview and summary of problems. *Bulletin of Marine Science*, 39: 290-322.